CHAPTER 2

Brooding and Brooder Pens

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Conscientious and carefully managed brooding of heritage turkey poults is crucial to their long-term health and survival. Farmers express frustration with low survivability in poults, which may stem from poor stock, chronic but not debilitating disease in the breeder flock, inadequate brooding husbandry, or shipping stress. Poults are most vulnerable to disease and cold when very young, so the utmost care and attention should be given to husbandry and sanitation to prevent losses during brooding. To increase the potential for success start with good vigorous stock from a reputable breeder. If possible, purchase poults from a local breeder to avoid the stresses of shipping. While overnight shipping is an acceptable and generally humane means of transporting day-old poults, postal delays and exposure to cold temperatures are not uncommon, and stress these young, fragile creatures. With good stock and detailed attention to their care early in their lives, poults can grow into healthy, hardy birds that will have few, if any, health problems.

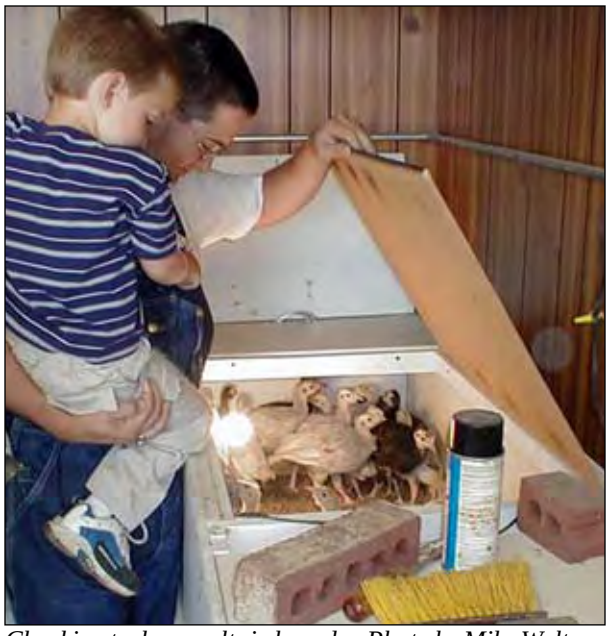
The Brooder

A brooder is essentially a safe, dry, uniformly warm, draft-free place where poults spend the first weeks of their lives. Brooder lamps come in two basic types, gas and electric. Sources for purchasing brooders and brooder lamps and plans to build your own brooder are listed in the resource section of this chapter.

Establish the brooder in a room or barn that is protected from the elements, free of drafts, and safe from predators. In addition to larger, more obvious predators (such as raptors, raccoons, dogs, and cats) secure the brooder from smaller predators such as rats, weasels, and snakes.

The brooder must be kept uniformly warm. The temperature at the floor needs to be maintained at 90º F or slightly higher, and temperature under the brooder at 95º F 2 to 3 inches from the floor. Turkeys with white feathers seem to prefer slightly warmer temperatures, so increase the temperature by 5º F. The most common source of heat for small-scale production is an electric brooder or heat lamp bulbs in ceramic fixtures. The lamp is typically suspended above the litter. The brooder should be set up at least several days in advance of the poults' arrival to allow the room temperature to stabilize. The temperature must be monitored to ensure that there is no fluctuation in temperature throughout the day and night. Thermostats can be purchased to help with this. Use one heat lamp per 50 poults. To reduce stress and pecking, use red or yellow bulbs. Fire is a real hazard with brooders so take special measures to minimize the risk by keeping the heat source at a safe distance from flammable materials and away from the walls of the brooding area.

The poults will need heat for their first 4 to 5 weeks of life. Once they have arrived, monitor the warmth of the brooder at least twice daily. When the brooder is a comfortable temperature, the poults will roam all around. If they are snuggled under the lamp, increase the temperature. If they are scattered to the edges of the brooder, reduce the temperature. Raise the height of the

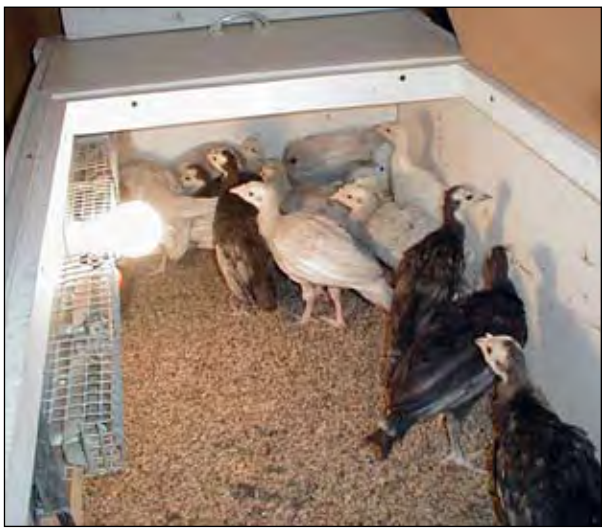


Checking turkey poults in brooder. Photo by Mike Walters

heat lamp a little each week, decreasing the temperature in the brooder by about 5° F each week. Monitor the poults and the weather to find optimal the temperature.

Place the brooder in an enclosed area. This space should retain heat from the brooder lamp, be draft-free and confine the poults. Provide ventilation, allowing fresh air to circulate in the brooding area, but protect the poults from drafts. Brooding enclosures may be purchased or made using readily available materials. The size of the brooder will depend on the number of poults to be raised at a given time. A simple wooden box may be sufficient. Small wading pools with a 12 to 14 inch sides are very functional. A simple circular cardboard barrier around the perimeter of the pool can be used which can be discarded and replaced between batches. The wading pool also has the advantage of being easily enlarged to accommodate the growing birds by enlarging the diameter of the cardboard perimeter as poults grow. If the brooder is square, round out the corners by adding a semi-circular pieces of material (cardboard, wood, or sheet metal) secured in each corner. This reduces the likelihood of poults piling into corners and suffocating the birds at the bottom.

If the brooder has been used before, disinfect it before introducing a new flock. Several weeks before any poults arrive, the building, brooder, and other equipment associated with the poults should be thoroughly cleaned and disinfected to prevent any contamination from pathogens that may be present from previous flocks, other livestock or wildlife. Use one of the phenol or quaternary ammonium compounds available from farm supply stores. Follow all directions and allow the house and equipment to dry and ventilate for several weeks before the poults arrive.



Turkey poults in brooder. Photo by Mike Walters

Most piling or picking problems in the flock are caused by over crowding. To avoid pecking issues allow ¾ to 1 square foot of floor space per poult up to 6 weeks of age. From 6 to 12 weeks of age increase this space to 2 square feet per poult. From 12 to 16 weeks, the minimal allowance is 3 square feet, though birds are typically introduced to pasture by 10 to 12 weeks of age.

Bedding

Bedding in the brooder needs to provide an absorbent, non-slippery surface for the young poults. Most producers use readily available pine shavings in a layer 3 to 4 inches deep. The pine oils in pine shavings have the advantage by reducing mold growth. Other options include rice hulls, ground corncobs, shredded newspaper or finely chopped straw (if it is changed often). Hardwood shavings and peanut hulls should not be used because they can become moldy. The use of cedar shavings is not generally recommended because their fumes can cause respiratory distress in young poults. Avoid sawdust because poults may eat it and become impacted in their crop or gizzard. Large particle litter, like woodchips, is not useful for bedding because it is not as absorbent as smaller particle litter.

Be attentive to the poults when they are first introduced to the brooding enclosure. If you see your new poults eating the bedding, you may choose to cover the bedding with newspaper or paper towels for the first couple of days, until they are eating their food well enough on their own. Don't use slick materials to cover the bedding as these may lead to leg injuries known as splay legs.

For many poultry producers, cleanliness is next to godliness. Because turkey poults have a poorly developed immune system, exposure to pathogens and toxins can significantly affect their health and survivability. Good husbandry begins in the brooder. Remove wet spots in the bedding quickly to prevent mold from growing and other pathogens, such as coccidia, from spreading. All of these organisms thrive in the warm, moist environment of the brooder. Pay particular attention to the area around the waterers, cleaning this area frequently. Add new bedding daily to provide poults with a clean surface. Traditional poultry producers will completely

remove and replace the brooder bedding every two weeks, or even more often, based on the number of poults in the brooder. This type of management allows for the gradual development of the birds' immune system from exposure to bacteria and other organisms. Some advocates of organic farming choose to leave soiled bedding in the brooder, adding fresh material on top of the old, creating a deep litter pack. This method has also proven itself to be a successful method for brooding healthy poults. Care must be taken, however, to avoid the build-up of ammonia emitted from the soiled litter. Humans, having a relatively weak sense of smell, cannot smell the ammonia until it is already caustic to the birds.

Wire mesh flooring works well as it aids with disease prevention and overall cleanliness. Use wire mesh no larger than ¼ inch x ¼ inch for the first 3 weeks. After three weeks, birds may be moved on to ½ inch x ½ inch mesh until they are old enough to go outside. Using ½ inch x ½ inch wire on 3-week-old or younger poults will result in their knee joints getting caught in the flooring. This can lead to lifelong leg problems.

Keeping poults up off the floor at about 36 inches will lower heating cost as only the air, and not the ground will need to be heated. Running a ceiling fan on low and moving air toward the ceiling will warm air trapped near the ceiling and circulate air to prevent cool spots from occurring in the brooding area without creating a draft on the poults.

Turkey poults in brooder with mesh flooring. Photo by Mike Walters.

Ammonia levels and their affect on birds	
10 PPM	damage occurs in air sacs over several weeks
25 PPM	damage occurs to air sacs and lungs in 48 hours
50 PPM	significant damage to air sacs and lungs in 1-2 weeks, threshold of human sense of smell to detect ammonia odor
100 PPM	some mortality in birds will begin to occur
PPM = parts per million	

Feeding and Watering New Poults

Encouraging new poults to eat can be a challenge. The new poults will not eat well if there is not sufficient light to keep up their activity level. Provide at least 14 hours of light daily, especially around the feeders and waterers.

Both food and water sources should be highly visible and obvious to the poults. As the poults grow, raise feeders and waterers so that these are level with their backs.

Newly hatched poults require a high protein diet (28%) with proper levels of lysine and methionine. These amino acids are important for first feather growth. (Feedstuffs will be more completely covered in the *Feeds and Feeding* chapter.) Feed should be presented to the new poults in shallow feed pans that they can climb into. Although this will be a bit messy, they are more likely to eat from this type of feeder set-up than from a feeder that prevents food loss. After 3 days, change to a no spillage type feeder that will prevent poults from jumping in and out of the food. Clean and scrub the feeders at least twice a day if the poults are getting into it. No-spill feeders should be cleaned and washed at least once a week. When the poults are old enough, provide daily access to quality forage to supplement their diet.

Simple chick waterers can be purchased from farm supply stores and will be sufficient for new poults. When your poults arrive they should be immediately shown where the water is by dipping the tip of their beaks in the waterer. Leave their beaks in the water for a few seconds to ensure that they have felt the water in their mouths. Water should be changed twice daily and the

receptacles thoroughly cleaned each time.

Water supplementation with probiotics has become a useful tool to some producers to help get the gastrointestinal tract of the birds populated with beneficial bacteria that aids digestion. Another useful supplement is water-soluble vitamin packs. The pack should be designed for poultry and added to the water from the fifth day of age till the tenth. To aid the immune system of the young poults add 1 tablespoon of apple cider vinegar per gallon of water to inhibit bacterial growth in the water and reduce the incidence of coccidiosis in the birds. This can be mixed with the vitamins or probiotics.

To reduce slime build up and sanitize the water use 1 to 5 PPM chlorine bleach in the water after the poults are at least ten days old. Use caution to not overdose the water as chlorine can burn the mouths of young poults. The proper level of chlorination can be achieved by mixing 1 to 2 ounces of 5.25% chlorine bleach solution in one gallon of water. A higher level of dosing accuracy can be achieved through the use of a medicator pump. Caution: Do not mix chlorine bleach and vinegar together, as toxic chlorine gas is released from the combination of the two items.

Roosts

Standard turkeys will start to use roosts at 2 weeks of age. Provide roosts in the brooder. Poles or branches about 2 inches in diameter and 6 inches off of the ground are ideal. Allow about 6 inches of roost per bird.

Observation and Health

Monitor the poults, brooder temperature, and their surroundings at least twice a day. By frequently checking your flock, you can learn what is normal for them and be able to detect and address problems early. Observe the poults' activity, eyes, nostrils, manure, and respiration so that you can get a good idea of what is normal. Brooder pneumonia, also known as aspergillosis, and coccidiosis are the two most frequent causes of death in poults. Both can be prevented with good husbandry practices.

Another common affliction of turkeys is the disease called Blackhead. This condition is caused by protozoa called *Histomonis melagridis*. The disease is particularly deadly to young poults up to 18 weeks of age. The protozoa are carried by cecal worms, certain earthworms, and snails, and are common in chickens. Chickens are more resistant to the parasite and can have an infestation without displaying clinical signs of illness. Most turkey producers choose not to raise chickens and turkeys together as a precaution to protect turkeys from contracting the disease from infected chickens. Adult turkeys can also be affected by Blackhead so careful observation will again be crucial to the health of your birds if you choose to mix them with other species of poultry. (For more information on diseases see the chapter of this manual entitled *Common Diseases and Health Problems of Turkeys.*)

Birds can develop immunity to diseases through natural exposure to pathogens or through vaccination. Usually individuals raising turkeys in large numbers choose to vaccinate for some of the more common diseases such as bronchitis, Newcastle, and M.G. (*Mycoplasma gallisepticum*).

If poults die, remove them immediately. Maintain good records to track the general health of the flock. Data on dead poults should include the date of death and any observations from the environment and of the poult itself.

Biosecurity

Until their immune systems are developed, new poults are vulnerable and more at risk of becoming ill, even from the nondescript organisms that the older turkeys can tolerate. Do not allow other animals or poultry to come in contact with them. You should also limit visitors, as people can often cross-contaminate the poults and bring in pathogens just as easily as an animal can. Wash your hands before and after working with the poults. Dedicate one pair of shoes or boots that will be worn only when working with the poults, especially if you have regular contact with other poultry, including your own. If you do not have dedicated shoes or boots you may opt to use a footbath filled with disinfectant (the same that was used for cleaning the brooder) at the entrance to the area where the poults are housed. Footbaths need to be changed regularly to ensure that the disinfectant is free of heavy loads of dirt or organic matter that can prevent the disinfectant from working properly. (More information on biosecurity can be found in the *Health Promotion and Biosecurity* chapter.)

Resources

American Livestock Breeds Conservancy, PO Box 477, Pittsboro, NC 27312, (919) 542-5704, albc@albc-usa.org, www.albc-usa.org.

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Field, Maurice Houston, *Building a Brooder for Fowl*, University of Tennessee, 1997, www.utm.edu/departments/ed/cece/idea/brood.shtml, University of Tennessee at Martin, 245 Boling University Center, Martin TN, 38238-5068.

Glos, Karma, *Organic Brooder Management*, Northeast Organic Farming Association of New York, Inc., 2002, www.nofany.org/offandf/02articles/organicbrooder.pdf, Northeast Organic Farming Association, PO Box 880 Cobleskill, New York 12043-0880, (607) 652-6632, fax (607) 652-2290, office@nofany.org.

Marsden, Stanley J., and Martin, J. Holmes, *Turkey Management*: *Sixth Edition*, Interstate Printers and Publishers, Inc., 1955.

Mercia, Leonard S., *Storey's Guide to Raising Turkeys*, Storey Publishing, 2001.

Brooding Equipment

Cutler Supply, 1940 N Old 51, Applegate, MI 48401, (810) 633-9450, fax (810) 633-9178, sales@cutlersupply.com, www.cutlersupply.com.

Metzer Farms, 26000 Old Stage Rd., Gonzales, CA, 93926, (800) 424-7755, fax (831) 679-2711, www.metzerfarms.com.

Murray McMurray PO Box 458, 191 Closz Dr., Webster City, Iowa 50595, (800) 456-3280, fax (515) 832-2213, www.mcmurrayhatchery.com.

Stromberg's Chicks and Gamebirds Unlimited, Stromberg's Chicks, PO Box 400, Pine River, MN 56474, (800) 720-1134 www.strombergschickens.com.

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